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Mrs. Graf

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During the early part of November Lewis A. Jones conferred with Forest Service officials, State technicians and employees on E.C.W. work at Jackson, Tenn. to review gully control work being done by the Conservation camps. Nearby erosion work completed by landowners several years ago and recent work done by Conservation camps in Mississippi and Tennessee were inspected.

The bureau was represented at the annual meeting of cooperative agencies conducting the Wisconsin soil erosion station at LaCrosse, Nov. 18, by Lewis A. Jones, C.E. Ramser and F.E. Hardisty. The Bureau of Chemistry and Soils, the Forest Service and the State of Wisconsin were also represented.

D. G. Miller inspected and reported on a large concrete pipe line being constructed by Civilian Conservation camps to supply fresh water to Lake Andes, South Dakota. Mr. Miller tested the soil at different places for sulphate content and found that along most of the pipe there was not enough sulphate in the soil to affect well-made concrete. Protection near the end of the pipe may be necessary because of the high sulphate content of the lake.

All conservation camps doing erosion control work in Minnesota and Wisconsin closed on November 15. The States of Minnesota, Wisconsin and North Dakota have been allotted funds with which to conduct winter surveys to locate and plan soil-saving dams and other structures to be constructed by emergency conservation camps next year. L.C. Tschudy will supervise such surveys during the winter.

Several new camps in Texas were assisted by W. D. Ellison in getting started on approved erosion-control work. He reports that fine work is being done by Texas and Oklahoma camps.

G. E. Ryerson accepted an appointment as engineer in the new Soil Erosion Service of the Department of the Interior effective November 16. Mr. Ryerson will work in the Southwest Wisconsin watershed which has been selected for a demonstration of erosion control. F.E. Hardisty was transferred from Zanesville to the LaCrosse station. V.D. Young, formerly with the Division of Mechanical Equipment and who has been on temporary duty at the Statesville station, has taken charge of the engineering work at Zanesville. F.O. Bartel, who has been on temporary duty with Civilian Conservation camps working out of the Louisville office, resumed charge of the engineering experiments at the Statesville station.

It was decided that large areas of eroded land in Tennessee, Kentucky, Indiana, and Ohio could be effectively protected by planting of trees and other suitable vegetation in and near gullies. Check dams and soil-saving dams will continue to be used by emergency conservation camps where such structures will furnish the most effective and economical control.

A survey of the Cunningham Farm near Cunningham, Wash. has been completed by P.C. McGrew. Five days were required to complete a transit and stadia survey of 480 acres. Sufficient details were taken to permit the plotting of 10-foot contours. The establishment of experiments to control wind erosion is in progress on this area.

H. S. Riesbol reports that a group of 30 students together with four faculty members of the University of Arkansas and several Smith-Hughes and Extension men visited the Guthrie Soil Erosion Station on Oct. 21. J. B. Woods, Agricultural Engineer and Dr. R.P. Bartholomew, Agronomist, stated that this trip to the Guthrie farm has been made a requirement for graduation in the College of Agriculture.

Two groups of visitors were conducted over the erosion station at Clarinda, Iowa by R. A. Norton, one consisting of farmers living near Pawnee City, Nebraska and the other consisting of 15 to 20 vocational-agriculture students from Stanton, Iowa, who were accompanied by their instructor.

According to R. W. Baird considerable difficulty is still being experienced in the cultivation of crops on steep terraced land where the soil is sandy on the Tyler Farm. However, some slight changes in the farm machinery have improved operations considerably. This year the two-row cotton and corn planter was rebuilt, making each furrow opener free to rise or fall with changes in the ground surface, and the quality of the work was improved. The changes that have been made enable accomplishment of work with the tractor machinery that compares favorably with that done with the small horse-drawn tools except on very steep slopes or in deep loose sand.

Results on the Bethany station show an erosion loss of 0.92 ton per acre in 1932 for an unterraced blue grass pasture area. According to A. T. Holman it was found that the erosion loss from the pasture area was 47 per cent greater than from a level-terraced area planted to corn. With the exception of a few small raw gullies, the pasture was fairly well covered with a good blue grass sod.

N. A. Kessler has been assigned temporarily to the work of the Subsistence Homesteads of the Department of the Interior. His work will consist of supervising land-clearing operations on these subsistence farms.

An implement designed by C. A. Taylor and Harry G. Nickle for controlling weeds in irrigation furrows was demonstrated by Mr. Nickle at a meeting near Anaheim, Calif., called by the Orange County Farm Advisor's office. About 200 persons were present. A demonstration was also given at a similar meeting held by the Los Angeles County Farm Advisor's office near Covina. A talk on "The Range of Available Soil Moisture in Relation to Citrus Root Distribution" was given by Mr. Taylor before the Lemon Men's club at Los Angeles October 4.

A report of the Hootenai, Idaho, irrigation experiments for the past season was prepared by L. T. Jessup, and submitted to the U. S. Geological Survey, which is sponsoring the work. All tanks and surrounding area were

planted to Marquis wheat on May 12 and harvested September 12. Soils used were silty clay loam, peat, and silt over muck. No crop was obtained from the tanks containing silt over muck soils.

A paper on "Control of Sand and Sediment in Irrigation, Power and Municipal Water Supplies" was presented by R. L. Parshall before the meeting of the Western Branch of the American Water Works Association at Denver on October 24, at which time he exhibited a working model of the vortex tube.

Observations of depth of moisture penetration made by Dean W. Bloodgood at the Yuma, Experiment Station, Arizona, indicate that neither the head of water applied nor the length of time required to irrigate the plots influenced the depth of penetration as much as the preparation of the land before the crop was planted. Experiments during October on irrigation of grain sorghum, cotton, corn, mature alfalfa and first year alfalfa showed a variation of penetration of from 12 to 18 inches in the case of upper portions of cotton, alfalfa plots, to more than 48 inches in the case of corn and lower portions of mature alfalfa plots.

Consolidation of two canal companies in Arizona was completed by L. M. Winsor, who has been working at intervals during the past three years to bring about this consolidation.

Final soil sampling at Scottsbluff Experiment Station was completed for the season by Leslie Bowen, which practically closed the year's field work.

A report in three volumes on "Investigations in Lower Rio Grande Valley, Texas, for the Farm Credit Administration has recently been completed by the Division of Irrigation. A similar report in two volumes on Imperial Valley, California, is nearing completion.

The Public Works Administration has allotted a total of \$23,800 to this bureau for the installation of two sand trap devices in Imperial Valley, Calif., eight water-spreading plots in San Bernardino Valley, Calif., and an experimental irrigation system at Medford, Oregon.

The annual meeting of the Joint Committee on Fertilizer Application was held in Chicago on November 15, where G. A. Cumings, chairman of the subcommittee on machine application of fertilizer discussed various phases of the experimental work in progress. During the past season fertilizer placement studies were undertaken with snap beans, lima beans, corn, cotton, potatoes, sugar beets, and tobacco, at 37 locations in 19 States. Results of the sugar beet studies were not available. For the other crops, fertilizer in the usual amounts was generally most effective when applied in a band at each side of the row. For cotton a band at one side apparently is as efficient as a band at each side. Location of the fertilizer bands approximately 2 inches from the seed or plant and a little below the seed level gave best results. Representatives of farm-implement manufacturers discussed their activities relative to the development of fertilizer-distributing machinery and assured the committee of their cooperation in any machinery development that appeared

feasible. The Joint Committee recommended that the results be made available to the public and that the present studies be continued. Suggestions for further expansion of the work included studies of fertilizer placement for various horticultural crops, neutral versus acid fertilizers, and fundamental characteristics of distributing equipment.

The ten acres operated by E.M. Mervine for experimental work on sugar-beet machinery near Ft. Collins, Colo. yielded 145 tons of beets.

S. W. McBirney has completed one unit of a hill-drop beet planter of rather unusual construction, which is drawing some very favorable comment from men in the industry who have seen it perform.

On the cotton production project, final results from the Prattville field under dry-season conditions show that seed-bed preparation pays in increased yield, but that the highest return in cotton per unit work comes with a few simple machine operations. In fall busting and spring rebusting, 8 inches deep, the beds made with the middle buster gave the highest return for the power input.

The variable-depth cotton planter data show uniform yields from plantings over a wide range of dates and soil conditions due to the more uniform stands obtained with this implement as compared with other planters.

J. W. Randolph reported Washington October 25 to work on plans for the construction of the soil manipulation plots at Auburn, Ala.

Corn harvesting tests are completed for this season on the corn production machinery project except for timeliness tests which are scheduled to be made once a week until early in Dec. C.K. Shedd reports that a high wind and dust storm on Nov. 12 severely damaged corn that was standing in the field. A test made a few days before this storm showed 3.2 bushels per acre of ears blown off, and a test after the storm showed 33.8 bushels per acre of ears blown off.

Studies of labor expenditures in harvesting corn with picker-huskers during the past three years have shown that the man-labor in picking is only about half as much as that in transporting the corn and putting it into cribs on the farm. A good deal of time is lost with pickers as regularly equipped, due to inconvenience of the hitches provided for trailing the wagon to receive the corn as husked by the machine. With a regular hitch changing wagons two men and an average of 3.4 man-minutes were required, whereas with an experimental hitch perfected this year one man changed wagons in an average time of 24 seconds. The improvement made in the tests as a result of the studies to save time is indicated in the following table, which shows total time to harvest corn and place it in a crib on the farm.

Year	Yield		Total labor in man-hours	
	Bu. per acre	Per acre	Per 100 bushels	
1931	63.1	2.19	4.23	
1932	69.3	1.86	3.07	
1933	78.1	1.51	2.17	